

Claims:

1. An electrolyte for the galvanic deposition of aluminum-magnesium alloys, containing at least one organoaluminum complex compound of formula MAIR_4 or mixtures thereof and an alkylmagnesium compound, wherein M represents Na, K, Rb or Cs, and R represents a C_1 - C_{10} alkyl group, preferably a C_1 - C_4 alkyl group.
2. The electrolyte according to claim 1, characterized in that the electrolyte additionally includes trialkylaluminum.
3. The electrolyte according to claim 1 or 2, characterized in that the electrolyte includes AlR_3 , M^1AlR_4 , M^2AlR_4 and $\text{Mg}(\text{R}^1)_x(\text{R}^2)_y$, wherein M^1 and M^2 are different from each other, representing Na, K, Rb or Cs, R represents a C_1 - C_{10} alkyl group, preferably a C_1 - C_4 alkyl group, R^1 and R^2 independently represent a C_1 - C_{20} , preferably a C_2 - C_{10} alkyl group, and $x = 0$ to 2, and $y = 0$ to 2, and $x + y = 2$.
4. The electrolyte according to one or more of claims 1 to 3, characterized in that the alkylmagnesium compound is included in an amount of from 0.01 to 10 mole-%, preferably from 0.1 to 1 mole-%, relative to the aluminum complex.
5. The electrolyte according to one or more of claims 1 to 4, characterized in that the alkylmagnesium compound is selected from the group of $\text{Mgbutyl}_{1.5}\text{octyl}_{0.5}$, $\text{Mgbutyl}_{1.0}\text{ethyl}_{1.0}$, $\text{Mgsec-butyl}_{1.0}\text{n-butyl}_{1.0}$ or mixtures thereof.

6. The electrolyte according to one or more of claims 1 to 5, characterized in that the electrolyte includes an organic solvent.
7. The electrolyte according to claim 6, characterized in that the organic solvent is an aromatic solvent.
8. The electrolyte according to claim 7, characterized in that the aromatic solvent is benzene, toluene or xylene or a mixture thereof.
9. A method for the production of the electrolyte according to claims 1 to 8, characterized by the following steps:
 - supplying an organoaluminum complex compound of formula $MAIR_4$ or a mixture thereof, optionally in combination with trialkylaluminum,
 - addition of an alkylmagnesium compound,wherein M represents Na, K, Rb or Cs, and R represents a C_1 - C_{10} alkyl group, preferably a C_1 - C_4 alkyl group.
10. The method according to claim 9, characterized in that the organoaluminum complex compound is a mixture of M^1AIR_4 and M^2AIR_4 , wherein M^1 and M^2 are different from each other, representing Na, K, Rb or Cs, R represents a C_1 - C_{10} alkyl group, preferably a C_1 - C_4 alkyl group.
11. The method according to claim 9, characterized in that the alkylmagnesium compound is $Mg(R^1)_x(R^2)_y$, wherein R^1 and R^2 independently represent a C_1 - C_{20} , preferably a C_2 - C_{10} alkyl group, and $x = 0$ to 2 , and $y = 0$ to 2 , and $x + y = 2$.

12. The method according to one or more of claims 9 to 11, characterized in that the alkylmagnesium compound is added dissolved in a hydrocarbon.
13. The method according to one or more of claims 9 to 11, characterized in that the alkylaluminum complex is supplied dissolved in an aromatic hydrocarbon.
14. The method according to claim 12, characterized in that the hydrocarbon is a saturated or unsaturated hydrocarbon.
15. The method according to claim 14, characterized in that the hydrocarbon is selected from the group of i-pentane, n-pentane, hexane, n-hexane, heptane, n-heptane, toluene, xylene.
16. An electrolyte for the production of aluminum-magnesium alloys on electrically conducting materials or electrically conducting layers, which can be produced according to the method of claims 9 to 15.
17. A method of coating electrically conducting materials or layers with aluminum-magnesium alloys using the electrolyte in accordance with claims 1 to 8, in which method the alkylmagnesium compound is metered during coating.
18. Use of the electrolyte according to claims 1 to 8 and 16 for the production of layers of aluminum-magnesium alloys on electrically conducting materials or layers.
19. An electrolysis kit for the galvanic deposition of aluminum-magnesium alloys on electrically conducting materials or layers, including:

- (a) the organoaluminum complex compounds or alkylaluminum compounds of claims 1 to 3; and
 - (b) an alkylmagnesium compound in accordance with claims 1, 3, 5.
20. The electrolysis kit according to claim 19, characterized in that the compounds (a) and (b) are present in an organic solvent.